PATENT ABSTRACTS OF JAPAN

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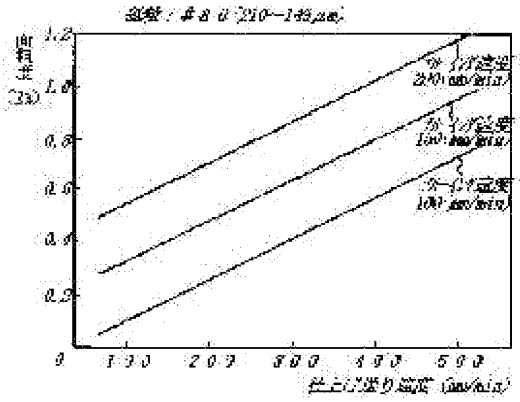
(54) GRINDING METHOD OF MILL ROLL

(57)Abstract:
PURPOSE: To improve the operation efficiency by forming a job for mill roll grinding of high-speed steel, semihigh-speed steel or the like so efficiently, while securing roll surface roughness conformed to a product to be rolled freely according to truing speed and finishing feed rate, and executing each rolling smoothly without entailing any preparations and control over a lot of mill rolls.
CONSTITUTION: A mill roll is ground by a grinding wheel made up of turning an abrasive grain to a cubic boron nitride and a binder into being vitrified, and either of feed rate at time of truing or feed rate at time of grinding or both are regulated, thus surface roughness of the ground roll is controlled.



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CLAIMS

[Claim(s)]
[Claim 1]A grinding method of a reduction roll controlling surface roughness of a roll with which a reduction roll was made to grind with an emery wheel stone which made a binding material BITORIFAIDO by cubic boron nitride, and an abrasive grain adjusted either or both sides of a feed rate at the time of truing, or a feed rate at the time of grinding with, and was ground.
[Claim 2]A feed rate of finishing of a feed rate at the time of truing at the time of 100 - 200 mm/min and grinding is adjusted within the limits of 80 - 500 mm/min, A grinding method of the reduction roll according to claim 1 controlling surface roughness of a ground roll in the range of Ra:0.05-1.2micrometer.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the grinding method of a reduction roll, and it is going to provide the method of making able to conform to the quality of the flat rolled product aiming at the machined surface relative roughness of the reduction roll used for rolling of steel materials etc., and carrying out adjustable setting simply and exactly.
[0002]rolling and producing commercially metal rolled stock, such as steel materials, with a roll, although it just which was carried out by versatility for many years came, The flat rolled product in which it was required for to make it conform to the quality of the product made into the purpose in rolling which ****(ed), and to control the machined surface relative roughness of a roll over the considerable range, and it had the target quality by it can be obtained.
[0003]However, in order to change the surface roughness of a roll like a lever, the technique adopted conventionally elects what for which the particle size of the use abrasive grain was changed that prepares various emery wheel stones in some numbers and is suitable out of those grinding stones in each case, and exchanging and grinding a grinding stone is performed.
[0004]
[Problem(s) to be Solved by the Invention]However, in what is depended on the above conventional technologies, it cannot but be required to prepare and manage the grinding stone of various sorts, it cannot but serve as a high cost, and exchanging operation cannot but become complicated.
[0005]Exchange of the above emery wheel stones is faced especially, Performing truing and a dressing is a reason which obtains and closes suitable and effective grinding at every the exchange of the, and the man day cannot but become fairly large, also in time, it cannot but need a long time and cannot but become what has a low capacity performance factor of a roll grinder.
[0006]
[Means for Solving the Problem]As this invention repeats examination about canceling a technical problem in conventional technology which was described above, uses a specific emery wheel stone and it obtains and closes surface roughness of a roll which fitted the purpose products by adjusting a feed rate at the time of the truing or grinding, it is as the following.
[0007](1) A grinding method of a reduction roll controlling surface roughness of a roll with which a reduction roll was made to grind with an emery wheel stone which made a binding material BITORIFAIDO by cubic boron nitride, and an abrasive grain adjusted either or both sides of a feed rate at the time of truing, or a feed rate at the time of grinding with, and was ground.
[0008]A feed rate at the time of truing (2) 100 - 200 mm/min, A grinding method of a reduction roll given in the above (1) adjusting a feed rate of finishing at the time of grinding within the limits of 80 - 500 mm/min, and controlling surface roughness of a ground roll in the range of Ra:0.05-1.2micrometer.
[0009]
[Function]Roll grinding whose durability it is efficient and is high is made to perform by making a reduction roll grind with the emery wheel stone with which the abrasive grain made binding material BITORIFAIDO by cubic boron nitride.
[0010]The surface roughness of the roll ground by adjusting either or the both sides of the feed rate at the time of emery wheel stone truing by cubic boron nitride and BITORIFAIDO or the feed rate at the time of grinding as described above is controllable.

[0011]The feed rate at the time of truing of the above-mentioned emery wheel stone 100 - 200 mm/min, setting the surface roughness of the roll ground by adjusting the feed rate of finishing at the time of grinding within the limits of 80 - 500 mm/min in the range of Ra:0.05-1.2micrometer -- abbreviated -- it can control exactly and rolling with this roll is made to carry out rationally
[0012]
[Example]Although based on this invention which was described above, if what shows a concrete embodiment to an appending drawing is explained, Such roll grinding is made to **** the emery wheel stone 2 driven by the motor 1 to the reduction roll 4 as shown in drawing 1, And it carries out sending this in the informer stage 5, since the roll 4 is large-sized, the support is rotated in support of a roll neck at a rest work etc. nothing by center support, and to the drum section peripheral surface of the roll 4, a curved surface (crown), i.e., a convex, and KONKEPU are attached and ground.
[0013]In this invention, cubic system boron nitride is used as an abrasive grain as said emery wheel stone 2, It is a thing using the thing of composition of having formed this in one by using BITORIFAIDO as a binding material, Said cubic boron nitride carries out high-temperature-high-pressure processing of the hexagonal boron nitride under a suitable catalyst existence, This thing has about 2.5 times of the thing of a nature system of a fused alumina generally adopted as an abrasive grain, and about 2 times [of the thing of a nature system of silicon carbide] hardness, has one about 60 times the high thermal conductivity of this in thermal conductivity, and prevents the rise in heat of the grinding stone by grinding heat. On the other hand, BITORIFAIDO is excellent in rigidity and abrasive grain holding power is size.
[0014]truing for raising the deviation from circular form of an emery wheel stone by TSURUA 3, as it is shown in drawing 2 on the occasion of the attachment, since the emery wheel stone 2 by above cubic boron nitrides and BITORIFAIDO is excellent in abrasion resistance -- it carries out. Namely, using the cutter which embedded the diamond particle as TSURUA 3, by cutting this cutter in the direction of down cutting to the emery wheel stone 2, the deviation from circular form of the emery wheel stone 2 is gone up effectively, the tip of cubic boron nitride can be arranged and the deflection at the time of grinding can be changed into the minimum state.
[0015]Although describing above in grinding and performing a dressing suitably to the emery wheel stone [like] 2 is a reason which obtains and closes desirable grinding to a reduction roll, this dressing is effectively attained by forged steel roll grinding about the emery wheel stone of this invention which was mentioned above. Namely, as for the emery wheel stone 2 of this invention with the above composition, generating wear in the abrasive grain which is cubic boron nitride by such forged steel roll grinding does not have ******, Grinding about a binding material will be effectively carried out by the forged steel powder by forged steel roll grinding, and obtains and closes a suitable dressing.
[0016]About the presentation thru/or structure in an emery wheel stone which was described above, 40 to 60 capacity % is obtained for an abrasive grain, and 15 to 25 capacity % and porosity are generally obtained for a binding material (vitrified) as a 25 - 35 capacity % grade. That is, in that in which an abrasive grain does not reach 40 capacity %, if a grinding effect is not acquired efficiently but exceeds 60 capacity % on the other hand, the joint unification as a grinding stone will not be obtained appropriately. The range of a desirable abrasive grain is 48 to 55 capacity %, and especially the particle size is 0.04-0.60 mm 0.02-1.20 mm.
[0017]About binding material BITORIFAIDO, specific gravity 2.2 to about 2.8, and hardness HV700 - 820kgf/mm^2, it is an HV760 - 790kgf/mm^2 grade especially -- Young's modulus -- 6800 - 7500kgf/mm^2 -- it is a 7100 - 7350kgf/mm^2 grade especially. As for tensile strength, an thermal expansion coefficient is a thing about 1.6 - 1.9 W/m^{2}K, and, as for a 3 - 9x10^{-6}/** grade and thermal conductivity, this thing is mixed [more than 5.5kgf/mm^2] within the limits of the above blending ratios, especially 19 - 21 capacity %. The range with preferred porosity is 29 to 31.5 capacity %.
[0018]It is what truing is carried out only for the purpose of eccentric removal with a diamond cutter as it described above in this invention, and sets the emery wheel stone 2 to a proper mounting state, Projection of the abrasive grain in the surface of the emery wheel stone 2 is also made to aim at moderately by carrying out by the down cutting method by which an emery wheel stone and the hand of cut of TSURUA take a downward direction from [both] a joint position.
[0019]The result of similarly having ground the semi high-speed-steel roll using the emery wheel stone 2 of this invention is shown in Table 3 and Table 4 which the result of having ground the forged steel roll using the emery wheel stone 2 of this invention which was described above is shown in the next Table 1 and 2, and

follow this.

[0020]

[Table 1]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
1	3 0	3 0	7 0 0	1 2 0 0
1	3 0	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 5	4 5	7 0 0	2 4 0

適用したロール　：鍛鋼ロール

ツルーイング速度：１５０（mm／min）

仕 上 げ 粗 さ：0.２１（Ra）

[0021]

[Table 2]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
1	3 0	3 0	7 0 0	1 2 0 0
1	3 0	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 5	4 5	7 0 0	2 4 0

適用したロール　：鍛鋼ロール

ツルーイング速度：２００（mm／min）

仕 上 げ 粗 さ：0.４２（Ra）

[0022]

[Table 3]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	2 4 0
適用したロール　：セミハイスロール ツルーイング速度：１５０（mm／min） 仕　上　げ　粗　さ：0.３０（Ra）				

[0023]
[Table 4]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	2 4 0
適用したロール　：セミハイスロール ツルーイング速度：２００（mm／min） 仕　上　げ　粗　さ：0.６１（Ra）				

[0024]That is, in Tables 3 and 4 [1, 2, and], grinding conditions are the same respectively, moreover it finishes, and it can be referred to as resulting from truing speed that granularity changes like 0.21 (Ra), 0.42 (Ra) or 0.30 (Ra), and 0.61 (Ra). and the changing condition of such finishing granularity -- between change of truing speed -- abbreviated -- it is checked that orderly correlation can be accepted, it finishes by control of truing, considering such a result, and surface roughness can be controlled.
[0025]Independently [these Table 1 - 4], even if truing conditions were the same, it was checked that it finishes with a finishing feed rate and surface roughness can be controlled. That is, concerning a semi high-speed-steel roll in next Table 5 and Table 6, the grinding conditions of passing time, a current value, the number of roll rotations, grinding stone number of rotations, and delivery speed are the same, and the result surface state at the time of controlling only a finishing feed rate from 150 mm/min to 300 mm/min is shown.
[0026]
[Table 5]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	1 5 0
適用したロール　：セミハイスロール ツルーイング速度：１５０（mm／min） 仕　上　げ　粗　さ：0.54（Ra）				

[0027]
[Table 6]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	1 2 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	3 0 0
適用したロール　：セミハイスロール ツルーイング速度：２００（mm／min） 仕　上　げ　粗　さ：0.9（Ra）				

[0028]That is, it can adjust like the place explained about the truing speed in the Table 1 – 4 which finished even if truing speed was the same and other grinding conditions were the same than the result of Table 3, 5, and 4 and Table 6, and mentioned the surface roughness of the finished surface above by control of the feed rate.

[0029]Although drawing 3 is made with a feed rate at the time of truing which was mentioned above about the emery wheel stone which used abrasive grain #80 (210–149 micrometers) and the relation of the result side surface roughness by a feed rate is summarized and shown in it, Truing speed is finished by changing 100 – 200 mm/min, and result surface roughness (Ra) like a graphic display is obtained by a relation with a feed rate. that is, roll surface granularity can be chosen free in the range to 1.2Ra, and it is possible to expand more the surface roughness range acquired by raising truing speed and a finishing feed rate further, and natural -- those conditions -- it can ask for surface roughness exactly by how.

[0030]Although drawing 4 is made with the same truing feed rate as drawing 3 about an emery wheel stone which used abrasive grain #120 (125–88 micrometers) and the relation of the result surface roughness by a feed rate is shown in it, Also in this case, the same relation as drawing 3 is accepted and roll surface relative roughness can be controlled by those speed.

[0031]Although the grinding conditions for obtaining target surface roughness by changing an abrasive grain although the relation of a particle size of an abrasive grain and surface roughness which were described above

is shown in drawing 5 differ, it is as a graphic display that a relation orderly also in this case is accepted.
[0032]Therefore, it is anyway in ** that it adjusts free and desirable rolling can be made in each case by choosing either or both sides of truing speed and a finishing feed rate which described above the surface roughness of the reduction roll suitable for the quality demanded in each flat rolled product.
[0033]As mentioned above, with truing speed and a finishing feed rate, it becomes unnecessary to prepare the reduction roll of a large number which differed in surface roughness like before from the place where the surface roughness adapted to each rolled bar affair is obtained, and the capacity performance factor of a roll grinder can also be simultaneously carried out to a high level.
[0034]In the above mentioned Table 1 – 6, passing time is the number of times of delivery, and one way is carried out once, and it makes the round trip 2 times, and a current value shows rotational load and embossing pressure load.
[0035]
[Effect of the Invention]The roll surface granularity adapted to the product which reduction roll grinding of high-speed steel, a semi high speed steel, etc. can be efficiently carried out when based on this invention which was explained above, and should be rolled Truing speed, a finishing feed rate -- each rolling is carried out smoothly, and it has effects, such as raising operation efficiency, without preparing and managing the reduction roll of a profitable bundle and a large number free by how, and is the large invention of the effect industrially.

[Translation done.]

TECHNICAL FIELD

[Industrial Application]This invention relates to the grinding method of a reduction roll, and it is going to provide the method of making able to conform to the quality of the flat rolled product aiming at the machined surface relative roughness of the reduction roll used for rolling of steel materials etc., and carrying out adjustable setting simply and exactly.

[0002]rolling and producing commercially metal rolled stock, such as steel materials, with a roll, although it just which was carried out by versatility for many years came, The flat rolled product in which it was required for to make it conform to the quality of the product made into the purpose in rolling which ****(ed), and to control the machined surface relative roughness of a roll over the considerable range, and it had the target quality by it can be obtained.

[0003]However, in order to change the surface roughness of a roll like a lever, the technique adopted conventionally elects what for which the particle size of the use abrasive grain was changed that prepares various emery wheel stones in some numbers and is suitable out of those grinding stones in each case, and exchanging and grinding a grinding stone is performed.

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EFFECT OF THE INVENTION

[Effect of the Invention]The roll surface granularity adapted to the product which reduction roll grinding of high-speed steel, a semi high speed steel, etc. can be efficiently carried out when based on this invention which was explained above, and should be rolled Truing speed, a finishing feed rate -- each rolling is carried out smoothly, and it has effects, such as raising operation efficiency, without preparing and managing the reduction roll of a profitable bundle and a large number free by how, and is the large invention of the effect industrially.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, in what is depended on the above conventional technologies, it cannot but be required to prepare and manage the grinding stone of various sorts, it cannot but serve as a high cost, and exchanging operation cannot but become complicated.
[0005]Exchange of the above emery wheel stones is faced especially, Performing truing and a dressing is a reason which obtains and closes suitable and effective grinding at every the exchange of the, and the man day cannot but become fairly large, also in time, it cannot but need a long time and cannot but become what has a low capacity performance factor of a roll grinder.

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MEANS

[Means for Solving the Problem]As this invention repeats examination about canceling a technical problem in conventional technology which was described above, uses a specific emery wheel stone and it obtains and closes surface roughness of a roll which fitted the purpose products by adjusting a feed rate at the time of the truing or grinding, it is as the following.
[0007](1) A grinding method of a reduction roll controlling surface roughness of a roll with which a reduction roll was made to grind with an emery wheel stone which made a binding material BITORIFAIDO by cubic boron nitride, and an abrasive grain adjusted either or both sides of a feed rate at the time of truing, or a feed rate at the time of grinding with, and was ground.
[0008]A feed rate at the time of truing (2) 100 - 200 mm/min, A grinding method of a reduction roll given in the above (1) adjusting a feed rate of finishing at the time of grinding within the limits of 80 - 500 mm/min, and controlling surface roughness of a ground roll in the range of Ra:0.05-1.2micrometer.

[Translation done.]

OPERATION

[Function]Roll grinding whose durability it is efficient and is high is made to perform by making a reduction roll grind with the emery wheel stone with which the abrasive grain made binding material BITORIFAIDO by cubic boron nitride.
[0010]The surface roughness of the roll ground by adjusting either or the both sides of the feed rate at the time of emery wheel stone truing by cubic boron nitride and BITORIFAIDO or the feed rate at the time of grinding as described above is controllable.
[0011]The feed rate at the time of truing of the above-mentioned emery wheel stone 100 - 200 mm/min, setting the surface roughness of the roll ground by adjusting the feed rate of finishing at the time of grinding within the limits of 80 - 500 mm/min in the range of Ra:0.05-1.2micrometer -- abbreviated -- it can control exactly and rolling with this roll is made to carry out rationally

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EXAMPLE

[Example]Although based on this invention which was described above, if what shows a concrete embodiment to an appending drawing is explained, Such roll grinding is made to **** the emery wheel stone 2 driven by the motor 1 to the reduction roll 4 as shown in drawing 1, And it carries out sending this in the informer stage 5, since the roll 4 is large-sized, the support is rotated in support of a roll neck at a rest work etc. nothing by center support, and to the drum section peripheral surface of the roll 4, a curved surface (crown), i.e., a convex, and KONKEPU are attached and ground.
[0013]In this invention, cubic system boron nitride is used as an abrasive grain as said emery wheel stone 2, It is a thing using the thing of composition of having formed this in one by using BITORIFAIDO as a binding material, Said cubic boron nitride carries out high-temperature-high-pressure processing of the hexagonal boron nitride under a suitable catalyst existence, This thing has about 2.5 times of the thing of a nature system of a fused alumina generally adopted as an abrasive grain, and about 2 times [of the thing of a nature system of silicon carbide] hardness, has one about 60 times the high thermal conductivity of this in thermal conductivity, and prevents the rise in heat of the grinding stone by grinding heat. On the other hand, BITORIFAIDO is excellent in rigidity and abrasive grain holding power is size.
[0014]truing for raising the deviation from circular form of an emery wheel stone by TSURUA 3, as it is shown in drawing 2 on the occasion of the attachment, since the emery wheel stone 2 by above cubic boron nitrides and BITORIFAIDO is excellent in abrasion resistance -- it carries out. Namely, using the cutter which embedded the diamond particle as TSURUA 3, by cutting this cutter in the direction of down cutting to the emery wheel stone 2, the deviation from circular form of the emery wheel stone 2 is gone up effectively, the tip of cubic boron nitride can be arranged and the deflection at the time of grinding can be changed into the minimum state.
[0015]Although describing above in grinding and performing a dressing suitably to the emery wheel stone [like] 2 is a reason which obtains and closes desirable grinding to a reduction roll, this dressing is effectively attained by forged steel roll grinding about the emery wheel stone of this invention which was mentioned above. Namely, as for the emery wheel stone 2 of this invention with the above composition, generating wear in the abrasive grain which is cubic boron nitride by such forged steel roll grinding does not have ******, Grinding about a binding material will be effectively carried out by the forged steel powder by forged steel roll grinding, and obtains and closes a suitable dressing.
[0016]About the presentation thru/or structure in an emery wheel stone which was described above, 40 to 60 capacity % is obtained for an abrasive grain, and 15 to 25 capacity % and porosity are generally obtained for a binding material (vitrified) as a 25 - 35 capacity % grade. That is, in that in which an abrasive grain does not reach 40 capacity %, if a grinding effect is not acquired efficiently but exceeds 60 capacity % on the other hand, the joint unification as a grinding stone will not be obtained appropriately. The range of a desirable abrasive grain is 48 to 55 capacity %, and especially the particle size is 0.04-0.60 mm 0.02-1.20 mm.
[0017]About binding material BITORIFAIDO, specific gravity 2.2 to about 2.8, and hardness HV700 - 820kgf/mm^2, it is an HV760 - 790kgf/mm^2 grade especially -- Young's modulus -- 6800 - 7500kgf/mm^2 -- it is a 7100 - 7350kgf/mm^2 grade especially. As for tensile strength, an thermal expansion coefficient is a thing about 1.6 - 1.9 W/m^{2}K, and, as for a 3 - 9x10^{-6}/** grade and thermal conductivity, this thing is mixed [more than 5.5kgf/mm^2] within the limits of the above blending ratios, especially 19 - 21 capacity %. The range with preferred porosity is 29 to 31.5 capacity %.
[0018]It is what truing is carried out only for the purpose of eccentric removal with a diamond cutter as it

described above in this invention, and sets the emery wheel stone 2 to a proper mounting state, Projection of the abrasive grain in the surface of the emery wheel stone 2 is also made to aim at moderately by carrying out by the down cutting method by which an emery wheel stone and the hand of cut of TSURUA take a downward direction from [both] a joint position.

[0019]The result of similarly having ground the semi high-speed-steel roll using the emery wheel stone 2 of this invention is shown in Table 3 and Table 4 which the result of having ground the forged steel roll using the emery wheel stone 2 of this invention which was described above is shown in the next Table 1 and 2, and follow this.

[0020]

[Table 1]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	50	30	700	1200
1	50	30	700	1200
1	30	30	700	1200
1	30	40	700	400
1	20	45	700	400
2	15	45	700	240

適用したロール　：鍛鋼ロール

ツルーイング速度：150（mm／min）

仕　上　げ　粗　さ：0.21（Ra）

[0021]

[Table 2]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	50	30	700	1200
1	50	30	700	1200
1	30	30	700	1200
1	30	40	700	400
1	20	45	700	400
2	15	45	700	240

適用したロール　：鍛鋼ロール

ツルーイング速度：200（mm／min）

仕　上　げ　粗　さ：0.42（Ra）

[0022]

[Table 3]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	50	30	700	1200
1	50	30	700	1200
2	30	30	700	1200
1	25	40	700	400
1	20	45	700	400
2	12	45	700	240
適用したロール　：セミハイスロール ツルーイング速度：150（mm／min） 仕　上　げ　粗　さ：0.30（Ra）				

[0023]
[Table 4]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	50	30	700	1200
1	50	30	700	1200
2	30	30	700	1200
1	25	40	700	400
1	20	45	700	400
2	12	45	700	240
適用したロール　：セミハイスロール ツルーイング速度：200（mm／min） 仕　上　げ　粗　さ：0.61（Ra）				

[0024]That is, in Tables 3 and 4 [1, 2, and], grinding conditions are the same respectively, moreover it finishes, and it can be referred to as resulting from truing speed that granularity changes like 0.21 (Ra), 0.42 (Ra) or 0.30 (Ra), and 0.61 (Ra). and the changing condition of such finishing granularity -- between change of truing speed -- abbreviated -- it is checked that orderly correlation can be accepted, it finishes by control of truing, considering such a result, and surface roughness can be controlled.
[0025]Independently [these Table 1 - 4], even if truing conditions were the same, it was checked that it finishes with a finishing feed rate and surface roughness can be controlled. That is, concerning a semi high-speed-steel roll in next Table 5 and Table 6, the grinding conditions of passing time, a current value, the number of roll rotations, grinding stone number of rotations, and delivery speed are the same, and the result surface state at the time of controlling only a finishing feed rate from 150 mm/min to 300 mm/min is shown.
[0026]
[Table 5]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	4 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	1 5 0
適用したロール　：セミハイスロール ツルーイング速度：１５０（mm／min） 仕　上　げ　粗　さ：0.54（Ra）				

[0027]
[Table 6]

Pass 回数	電流値 Amp	ロール 回転数	砥　石 回転数	送り スピード
1	5 0	3 0	7 0 0	1 2 0 0
1	5 0	3 0	7 0 0	1 2 0 0
2	3 0	3 0	7 0 0	1 2 0 0
1	2 5	4 0	7 0 0	1 2 0 0
1	2 0	4 5	7 0 0	4 0 0
2	1 2	4 5	7 0 0	3 0 0
適用したロール　：セミハイスロール ツルーイング速度：２００（mm／min） 仕　上　げ　粗　さ：0.9（Ra）				

[0028]That is, it can adjust like the place explained about the truing speed in the Table 1 - 4 which finished even if truing speed was the same and other grinding conditions were the same than the result of Table 3, 5, and 4 and Table 6, and mentioned the surface roughness of the finished surface above by control of the feed rate.
[0029]Although drawing 3 is made with a feed rate at the time of truing which was mentioned above about the emery wheel stone which used abrasive grain #80 (210-149 micrometers) and the relation of the result side surface roughness by a feed rate is summarized and shown in it, Truing speed is finished by changing 100 - 200 mm/min, and result surface roughness (Ra) like a graphic display is obtained by a relation with a feed rate. that is, roll surface granularity can be chosen free in the range to 1.2Ra, and it is possible to expand more the surface roughness range acquired by raising truing speed and a finishing feed rate further, and natural -- those conditions -- it can ask for surface roughness exactly by how.
[0030]Although drawing 4 is made with the same truing feed rate as drawing 3 about an emery wheel stone which used abrasive grain #120 (125-88 micrometers) and the relation of the result surface roughness by a feed rate is shown in it, Also in this case, the same relation as drawing 3 is accepted and roll surface relative roughness can be controlled by those speed.
[0031]Although the grinding conditions for obtaining target surface roughness by changing an abrasive grain

although the relation of a particle size of an abrasive grain and surface roughness which were described above is shown in drawing 5 differ, it is as a graphic display that a relation orderly also in this case is accepted.
[0032]Therefore, it is anyway in ** that it adjusts free and desirable rolling can be made in each case by choosing either or both sides of truing speed and a finishing feed rate which described above the surface roughness of the reduction roll suitable for the quality demanded in each flat rolled product.
[0033]As mentioned above, with truing speed and a finishing feed rate, it becomes unnecessary to prepare the reduction roll of a large number which differed in surface roughness like before from the place where the surface roughness adapted to each rolled bar affair is obtained, and the capacity performance factor of a roll grinder can also be simultaneously carried out to a high level.
[0034]In the above mentioned Table 1 – 6, passing time is the number of times of delivery, and one way is carried out once, and it makes the round trip 2 times, and a current value shows rotational load and embossing pressure load.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is an explanatory view showing the working state about roll grinding in this invention.
[Drawing 2]It is an explanatory view about the truing working state in this invention.
[Drawing 3]It is the chart which having made with the feed rate at the time of truing and in which summarizing and showing the relation of the roll surface granularity to a feed rate about the case of abrasive grain:#80.
[Drawing 4]Abrasive grain: It is a chart summarizing and showing the relation of the roll surface granularity to the same feed rate as drawing 3 about the case of #120.
[Drawing 5]It is a chart summarizing and showing the relation between the particle size of an abrasive grain, and roll surface relative roughness.
[Description of Notations]
1 Motor
2 Emery wheel stone
3 TSURUA
4 Reduction roll
5 Informer stage

[Translation done.]

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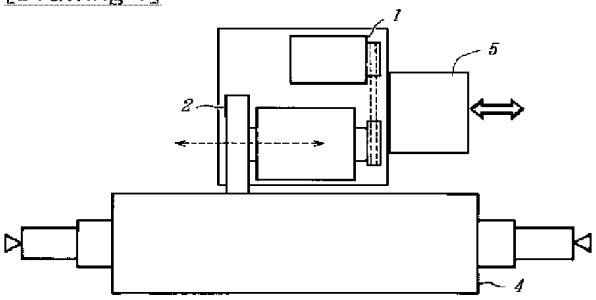
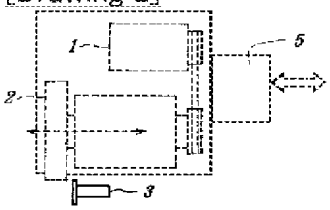
DRAWINGS

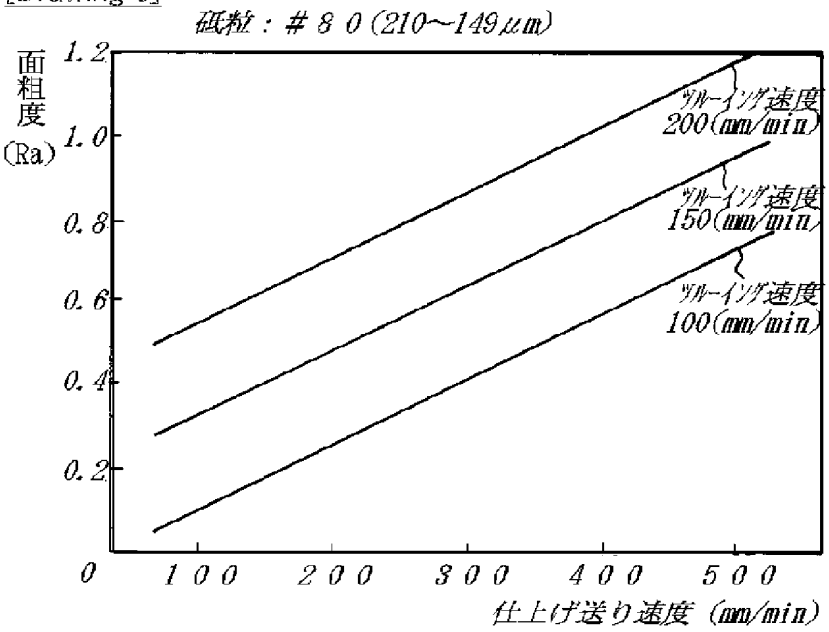
[Drawing 1]



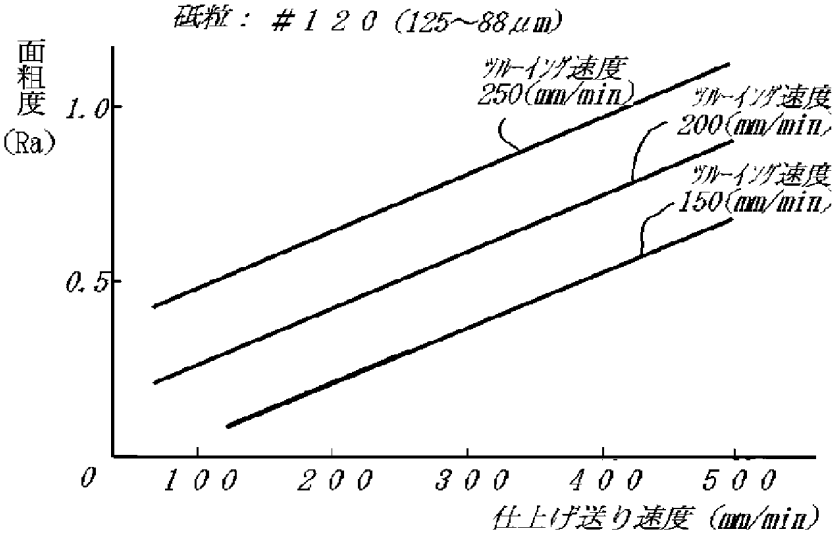
[Drawing 2]



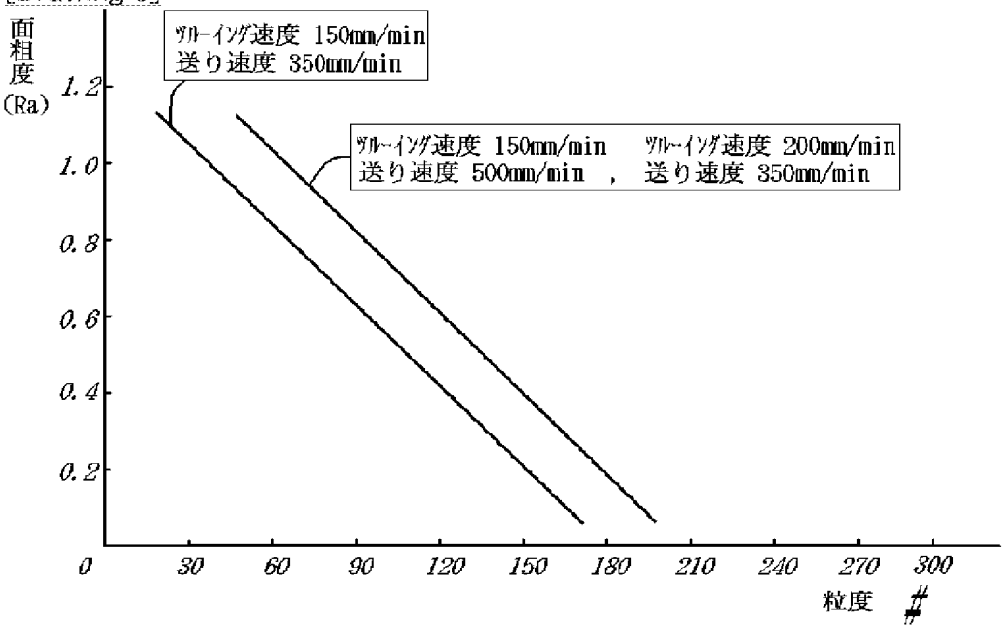
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]